

HILL FIELD  
(Hill Air Force Base)  
(Ogden Air Materiel Area)  
(Ogden Air Logistics Center)  
North of State Highway 193, East of  
Interstate 15, South of the Davis-  
Weber Canal, West of Wherry Road  
Layton vicinity  
Davis County  
Utah

HAER No. UT-85

HAER  
UTAH  
6-LAY. 4,  
2-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWING

HISTORIC AMERICAN ENGINEERING RECORD  
Rocky Mountain System Support Office  
National Park Service  
P.O. Box 25287  
Denver, Colorado 80225-0287

HISTORIC AMERICAN ENGINEERING RECORD

HILL FIELD

HAER No. UT-85

(HILL AIR FORCE BASE)

~~(OGDEN AIR DEPOT)~~

(OGDEN AIR MATERIEL AREA)

(OGDEN AIR LOGISTICS CENTER)

HAER  
UTAH  
6-LAY. V.  
2-

**Location:** North of State Highway 193, East of Interstate 15, South of the Davis-Weber Canal, West of Wherry Road, Layton vicinity, Davis County, Utah

NOTE: For shelving purposes at the Library of Congress, the Layton vicinity in Davis County was selected as the "official" location for Hill Field. However, Hill Field is also located in the Ogden vicinity, Weber County.

**Quads:** Clearfield, Kaysville, Ogden, and Roy

**UMT:** 12-417300-4550260  
12-418700-4551260  
12-418700-4551100  
12-418940-4551200  
12-417980-4552525  
12-417780-4552220  
12-417780-4551960

**Dates of Construction:** 1938-1942, 1943-1944, 1950-53

**Present Owner:** Ogden Air Logistics Center at Hill Air Force Base Ogden, UT 84056

**Present Use:** Base of the Air Force Logistics Command

**Significance:** Hill Field (now Hill Air Force Base, HAFB) became famous during World War II for its rehabilitation of battle-weary aircraft. Exercising its mission to receive, store, repair, and ship air materiel, HAFB became Utah's largest employer in the early 1950s, a status it retained until Defense Department downsizing led other employers to eclipse it in the mid 1990s.

By the mid-1930s the War Department understood the value of air power in America's defense. An Air Corps air mail experiment and an investigation of suitable base sites

led to a place east of Ogden Arsenal. Mobilization regulations and the Wilcox Act of 1935 anticipated six new air bases. War in Europe and Asia made the new bases imperative.

Cooperating with the Air Corps, the Ogden Chamber of Commerce took an option on land east of the Arsenal, part of which it donated to the government. Initial construction took place between 1938 and 1942. The Air Corps designated the installation as Hill Field and the command as Ogden Air Depot.

The command opened on November 7, 1940. During World War II Hill Field became well known for its rehabilitation of engines, airframes, instruments, and other parts on battle-weary aircraft--particularly the B-26, P-39, P-40, B-24, P-47, and A-20.

Following the war, employees stored and reconditioned air materiel for surplus sales and for peacetime uses, and for the Cold War. Immediately after the war employment declined from a wartime peak of 15,000 to fewer than 4,000. The command supplied materiel for counter insurgency and for the Berlin Airlift.

The outbreak of the Korean War in June 1950 revived HAFB. The Defense Department constructed new hangars, runways, storage, and repair facilities.

The need for more space led to the acquisition of Ogden Arsenal on April 1, 1955. As the Cold War intensified and war in Vietnam called for additional air materiel, employment rose to more than 17,000. HAFB missions have included management of the Snark, Genie, BOMARC, and Minuteman missiles and the F-4, F-15, and F-16 jets.

**Project Information:**

Hill Air Force Base, represented by Debbie Hall, sponsored this HAER project. The National Park Service, Rocky

Mountain System Support Office administered this project under the direction of historian Elizabeth Wegman-French.

Roger Roper of the Utah State historical Society assisted in coordination. Dr. Thomas G. Alexander, the Lemuel Hardison Redd, Jr. Professor of Western American History, Brigham Young University researched and wrote the historic context and overview report up through page 21; Jeff Malcomson wrote the subsequent pages. Mary Troutman, University of Utah, researched and wrote the technological information and individual building reports; architectural descriptions were based on work by Hardlines: Design & Delineation. Drawings were delineated by the office of Hardlines: Design & Delineation of Columbus, Ohio; and by Kayla S. Leyde, University of Utah, under the direction of Burtch W. Beall, FAIA and Dr. Thomas R. Carter. Richard Dockendorf photographed the resources. Art Olivas of Hill AFB facilitated the logistics at the base. Dr. Donald W. Klinko, Jr. Historian, Ogden Air Logistics Center supplied much of the data for this report.

### The United States Inaugurates Military Aviation

Although two Dayton, Ohio bicycle mechanics, Wilbur and Orville Wright pioneered heavier-than-air flight in December 1903, the United States fell behind European nations in designing and constructing military airplanes. During World War I, according to one commentator, the United States "scarcely qualified as a third-rate aeronautical power."<sup>1</sup> Only slightly more charitably, a standard history of the Air Service in World War II calls the story of American aviation before World War I, "one of promise rather than of achievement. [since as late as July 1917] . . . We had, literally speaking, no air force."<sup>2</sup> Although American firms manufactured a version of the British De Havilland DH 4, a two-place reconnaissance-bomber, most did not reach the front. Rather, most American pilots flew combat missions in French planes--Spads, Breguets, Salmsons, and Nieuports.<sup>3</sup>

Still, a number of Americans distinguished themselves in the war, flying for what the army then called the Air Service. The leading American Ace, Capt. Eddie Rickenbacker, shot down 22 planes and 4 balloons. Near the end of the war, Brig. Gen. Billy Mitchell commanded a fleet of nearly 1,500 American, British, French, and Italian aircraft, which achieved air superiority in the battle of Saint-Mihiel.<sup>4</sup>

Convinced of the promise of air power as a strategic weapon, following the war Mitchell demonstrated the devastating effect of air-delivered bombs by sinking six surplus German and American warships. Continuing his campaign for the recognition of air power Mitchell defied his superiors by continuing to lobby for an expanded strategic mission for the Air Service. The army lashed out at this upstart by sending him to exile in "Siberia"--San Antonio, TX. Continuing his campaign in defiance of orders, Mitchell resigned rather than accept a five year suspension, the sentence meted out after a fiery court martial in 1925.<sup>5</sup>

Moving somewhat slower than Mitchell thought necessary, the American government fostered a research program to design better airplanes. In 1915 had Congress established the National Advisory Committee for Aeronautics to conduct research programs. In cooperation

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<sup>1</sup>Tom D. Crouch, "Aviation," in Eric Foner and John A. Garraty, eds. The Reader's Companion to American History (Boston: Houghton Mifflin, 1991), 68.

<sup>2</sup>James Lea Cate, "The Air Service in World War I," in The Army Air Forces in World War II eds. Wesley Frank Craven and James Lea Cate, (New Imprint, 7 vols.; Washington, D. C.: Office of Air Force History, 1983), 1: 5,6.

<sup>3</sup>Cate, "Air Service in World War I;" Maurer Maurer, Aviation in the U. S. Army, 1919-1939 (Washington, D.C.: Office of Air Force History, 1987), xxi.

<sup>4</sup>Cate, "Air Service in World War I," 13-15.

<sup>5</sup>James Lea Cate and Wesley Frank Craven, "The Army Air Arm Between Two Wars, 1919-1939," in Craven and Cate, eds., Army Air Forces, I: 25-26; 27-28.

with the Bureau of Standards and private business, the NACA tried to improve such components as airframes, propellers, and properties of metal. In 1926 after the NACA had demonstrated the value of military aviation, Congress redesignated the Air Service as the Air Corps--a branch of the Army coordinate with Ordnance, Engineers, and Artillery, but with "less prestige than the Infantry."<sup>6</sup>

Nevertheless, like a body possessed by the souls of Dr. Jekyll and Mr. Hyde, military planners could not agree on the role of the Air Corps. The Command and General Staff School, the Army War College, and the Joint Board of the Army and Navy saw aviation's principal function as tactical--the "immediate support of the ground forces and Navy in" achieving their missions. By contrast, the Air Corps Tactical School viewed air power as "an independent means" of promoting strategic plans and national objectives.<sup>7</sup>

Not until the 1930s did the army reconcile these conflicting views, as America's land and sea bound command grudgingly accepted the concept of offensive air war. In a rather disorganized form, Mitchell proposed these ideas, and they appeared in a more systematic form in the thought of the Italian air strategist Giulio Douhet. Placed in practice in a preliminary form during World War I by the Royal Air Force under the command of Maj. Gen. Hugh M. Trenchard, the strategic use of air power involved two phases. The first consisted in clearing the air by the use of pursuit and attack planes, followed by the second phase, the use of airplanes for the strategic bombardment of enemy ground or sea forces or its industrial capability.<sup>8</sup>

Once the Air Corps had adopted the concept of strategic bombardment, it faced the problem of designing a bomber with at least a 5,000 mile range and a 2,000 pound bomb capacity. Perhaps the major step forward came with the introduction of all-metal monoplanes which replaced the wood and fabric biplanes that American pilots had flown throughout World War I. During 1933 and 1934 Boeing Aircraft Company engineers incorporated many of these characteristics into the Boeing B-17, Flying Fortress.<sup>9</sup>

An accident with one of these B-17s led to the naming of Hill Field. On October 30, 1935 while test flying the prototype of the B-17, then designated as the Boeing 299, Maj. Ployer P. Hill died in a fiery crash. At first the crash mystified the observers since the plane had flown without mishap from Seattle to Wright Field near Dayton, Ohio. An investigation revealed that someone had failed to unlock the rudder and elevator controls, and the plane had crashed because Hill could not maneuver it. A native of Newburyport, Massachusetts, Hill had earned a B.S. degree in civil engineering from Brown University. After service in the United States, Germany, and the Philippines, he transferred to Wright Field where he

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<sup>6</sup>Cate and Craven, "Army Air Arm Between Two Wars," 29, 55.

<sup>7</sup>Cate and Craven, "Army Air Arm Between Two Wars," 33

<sup>8</sup>Cate and Craven, "Army Air Arm Between Two Wars," 35-53.

<sup>9</sup>Cate and Craven, "Army Air Arm Between Two Wars," 54-67.

served as chief of the Flying Branch, and where the accident took place. On December 1, 1939, the army named the base on which Ogden Air Depot stood "Hill Field" in his honor.<sup>10</sup>

#### The Decision to Construct a Base Near Ogden:

Various events during the 1930s paved the way for the construction of Hill Field. After his inauguration as president in March 1933, Franklin D. Roosevelt became convinced that fraud and collusion had greased the negotiation of airmail contracts during Herbert Hoover's administration. Anxious to right what he perceived as a serious wrong, Roosevelt cancelled the contracts in early 1934, and on February 19, 1934 he gave the Air Corps the job of carrying the mail.<sup>11</sup>

As commander of the western zone during the airmail experiment, the Air Corps assigned Lt. Col. (later Gen.) Henry H. (Hap) Arnold. Arnold set up headquarters at the Newhouse Hotel in Salt Lake City, and he presided over the western zone from the intermountain operations center at a one-hangar grass strip that Salt Lake City used as a municipal airport. Arnold set up a supply and repair depot at Salt Lake City to avoid sending planes to California for repairs. In total 57 pilots flew in the western zone, most out of Salt Lake City.<sup>12</sup>

The airmail adventure proved disastrous. In the four months of operation--March through June 1934--the Air Corps suffered 66 crashes and 12 deaths. Generally harsh winter weather, lack of experience, faulty instruments, and airplanes unsuited for airmail operations doomed the project to failure.

Though the air mail experiment failed, it produced some positive results. Secretary of War George Dern appointed a committee headed by former Secretary of War Newton Baker to investigate the failed airmail experiment. Baker's board concluded that much of the fault lay with the airplanes and equipment and that the Air Corps needed newer and better planes, equipment, and training--but under the Army's command--to meet the minimum needs both

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<sup>10</sup>Leonard J. Arrington, Thomas G. Alexander, and Eugene A. Erb, Jr., "Utah's Biggest Business: Ogden Air Materiel Area At Hill Air Force Base, 1938-1965," Utah Historical Quarterly 33 (Winter 1965): 12; Maurer, Aviation in the U. S. Army, 354.

<sup>11</sup>The discussion of the airmail episode is based on: Helen Rice, History of Ogden Air Materiel Area, Hill Air Force Base, 1934-1960 2 vols. ([Ogden, UT: Air Force Logistics Command], 1963), 1: 1; U. S. Air Force, Materiel Command, Ogden Air Logistics Center, "Cultural Resource Management Plan for Hill Air Force Base, Utah," prepared by Hardlines: Design & Delineation (Hill Air Force Base: 1995), II-44-45; For a general treatment of the Air Mail experiment see Maurer, Aviation in the U. S. Army, 299-317.

<sup>12</sup>Maurer, Aviation in the U. S. Army, 308.

of America's defense and of experiments like airmail transport.<sup>13</sup>

For his part, Arnold became enamored with the Salt Lake City region as a potential site for an airbase. The generally favorable weather conditions and excellent geographic location for east-west flight made the Salt Lake area ideal as a future aviation center.<sup>14</sup>

Though identifying Utah as a future site, flying the airmail offered a diversion from the more serious job of planning a role for aviation in America's defense. Surveying the violent imperialism of Germany, Japan, and Italy, Maj. Gen. Oscar Westover, who became Chief of the Air Corps in 1935; Arnold, who succeeded him in 1938; and others saw that the world had become an increasingly dangerous place. In 1933, Westover, then Assistant Chief of the Air Corps, had planned and executed an exercise that showed the Air Corps could mobilize its planes to either coast within two and a half days to assist in repelling an invasion by hostile forces.<sup>15</sup>

To prepare for a possible defense of the American homeland, in February 1935, the War Department adopted a series of mobilization regulations. These regulations provided for the increased production of munitions and for the expansion of the Air Corps. Both these measures anticipated the need for additional artillery shell and bomb storage and for the renovation and construction of additional weapons and munitions.<sup>16</sup>

Westover also recognized that the Air Corps would need inland air bases to serve in support of the coastal installations. Concurrent with the airmail operations, Westover commissioned a survey of potential air base locations. In a report filed June 1, 1934 shortly after the airmail experiment ended, Maj. Hugh J. Knerr considered the possible sites in the Salt Lake-Ogden area. Knerr thought the land near the Salt Lake City airport too soggy, too prone to alkali dust storms, and too near an active municipal air base. He considered locations in South Salt Lake County, but found available land too expensive. Fort Douglas, a garrison east of Salt Lake City, offered a possibility, but Knerr thought it too near the mountains.<sup>17</sup>

Knerr found what he considered an ideal site east of the Ogden Arsenal, which at the

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<sup>13</sup>Maurer, Aviation in the U. S. Army, 315-16, 322.

<sup>14</sup>Roger D. Launius, "A Case Study in Civil-Military Relations: Hill Air Force Base and the Ogden Business Community, 1934-1945," Aerospace Historian 35 (Fall September, 1988): 155.

<sup>15</sup>Cate and Craven, "Army Air Arm Between Two Wars," 64.

<sup>16</sup>Harry C. Thomson and Lida Mayo, United States Army in World War II. The Technical Services. The Ordnance Department: Procurement and Supply (Washington, D. C.: Office of Military History, Department of the Army, 1960), 361-62.

<sup>17</sup>Thomas G. Alexander, "Ogden, A Federal Colony in Utah," Utah Historical Quarterly 47 (Summer 1979): 299.



time remained a neglected and ramshackle dump for obsolete weapons. The sandy soil near Sunset which the Ordnance Department had found ideal as a damper for potential munitions explosions extended only a short way to the east. The land beyond--between the Arsenal and the Wasatch Mountains--offered a firm foundation, 90 percent of which Knerr found suitable for runways. Moreover, as planners had found when they selected the Arsenal site, the potential air base stood near excellent transportation routes to the midwest and the Pacific coast both by rail and by auto.<sup>18</sup>

Commenting on Knerr's report and on other potential sites in the far west, Col. Arthur G. Fisher, chief of the Air Corps Plans Division, suggested that the Ogden site fit the nation's military needs better than any other place he knew of. Analyzing future needs, he said that the Air Corps would need factories, base depots, advance depots, and air bases. He expected to establish Pacific Coast air bases at Los Angeles, San Francisco, and Seattle. Unfortunately, all of these cities stood well within range of carrier-based air bombardment, and were logistically ill-suited as locations for base depots. Because of the semi-circular shape of North America's west coast, Ogden stood nearly equa-distant from the three coastal cities. Moreover, its rail and air communication routes offered the added advantage of "general accessibility to the coastal areas of operation." At the same time, its inland location left it less vulnerable to attack from the coast or from assaults across the United States's northern or southern borders. On balance, Fisher believed, northern Utah offered the best site as a base depot. He suggested Alameda, CA as the site for an advance depot.<sup>19</sup>

Until nearly September 1936 Utah had some political advantages over other potential sites since Utah's former governor George H. Dern served until his death as secretary of war. Given Dern's position, Utah officials like Mayors A. O. Smoot of Provo and Louis Marcus of Salt Lake City lobbied for the construction of air bases near their cities. Harmon W. Peery, later Ogden's mayor, also touted Ogden as did Ora Bundy, and others from the Ogden Chamber of Commerce. After serving as supervising construction engineer at the Ogden Arsenal, Bundy decided to live in Ogden where he opened an engineering firm. During 1935 he served as chair of the Chamber of Commerce's Aviation Committee. Working with others from the chamber such as Military Affairs Committee chair and Ogden automobile dealer Frank M. Browning, Bundy furnished a contour map of the future Hill Field site. He also emphasized the significant railroad, highway, and telephone communication facilities Ogden offered.<sup>20</sup>

At the time, the Ogden Chamber of Commerce together with the state government, the federal government, private charitable organizations, and business groups stood like armies at Armageddon battling the beastly economic collapse. In 1933, Utah's

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<sup>18</sup>Alexander, "Ogden, A Federal Colony," 299.

<sup>19</sup>Alexander, "Ogden, A Federal Colony," 299.

<sup>20</sup>Alexander, "Ogden, A Federal Colony," 300-301; Launius, "A Case Study in Civil-Military Relations," 156-57.

unemployment rate had reached nearly 36 percent. In 1935, the unemployment rate still hovered around 9.5 percent. Virtually anything that offered jobs to distraught Utahns seemed a Godsend.

Beyond the ruin of their economy, Americans feared that German and Japanese imperialism might embroil them in another war. Congress tried to insulate the United States from foreign entanglements while reinvigorating the military to defend the Western Hemisphere in "Fortress America." The War Department's new mobilization regulations of February 1935, anticipated the enlargement of the Air Corps. All of these conditions presaged the construction of new bases and depots.

To authorize this mobilization, Florida's J. Mark Wilcox and Utah's Elbert D. Thomas cosponsored legislation authorizing new air bases. The Wilcox Act authorized six air bases including a field somewhere in the Rocky Mountains to provide for maintenance and storage and for "training operations from the fields in high altitudes."<sup>21</sup>

In view of limited military appropriations, after the passage of the Wilcox Act Gen. Westover had to set priorities. On balance, Westover believed that in case of war, "a big depot may have to be established as far back as Ogden and Salt Lake City," but he concluded that the Air Corps had an even more immediate need for a repair and supply depot in northern California. A depot near Sacramento, he thought, could supply San Francisco by barge through the rivers and bay which linked the two cities. Concurring in Westover's recommendation, Congress authorized construction of a depot near Sacramento in June 1936.<sup>22</sup>

Anxious but unperturbed by this turn of events, the Ogden Chamber of Commerce decided to force Westover's hand. Taking an option on more than 4,700 acres of land, they offered their assistance to the Air Corps in acquiring the site near Ogden. Responding to this bold move, Westover sent Arnold to meet with the chamber and to look at the site. Recognizing that in spite of the priority he had set for construction of a new depot at Sacramento, the Ogden site would ultimately prove useful, he urged Arnold to investigate the Chamber's offer. Westover feared that if the Air Corps did not exercise the Chamber's options, land prices would skyrocket in anticipation of new construction, and the government might be unable to afford the site.<sup>23</sup>

After visiting in Ogden and inspecting the site, Arnold seemed enthusiastic. The chamber representatives treated him with the utmost courtesy. Anxious to promote the air base, the chamber exercised an option on 386 acres which it donated to the federal

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<sup>21</sup>U. S. Congress, Senate, Senate Report 888, 74th Cong., 1st Sess.; 49 U. S., Statutes at Large, 610.; Alexander, "Ogden, Federal Colony," 302.

<sup>22</sup>Alexander, "A Federal Colony," 302.

<sup>23</sup>Alexander, "Ogden, A Federal Colony," 302-03; Launius, "A Case Study in Civil-Military Relations," 157-58.

government for the base.<sup>24</sup>

In the meantime, congressmen and senators began squealing for the pork promised in the Wilcox Bill. The Air Corps announced that it planned to construct one of the six bases in the Pacific Northwest. Wilcox wanted one near Miami and Sen. Morris Sheppard, chair of the Senate Military Affairs Committee, expected the War Department to build one in Texas. Other influential legislators lobbied for bases in Mississippi and Virginia, and rumor had it that the intermountain base might go to New Mexico.

Senator Thomas lobbied with Arnold, raising questions of political favoritism. Denying such allegations, Arnold said that the location would "conform to the strategic and tactical needs of our national defense."

Nearly a year later, the Air Corps made its recommendation. Westover set up a commission headed by Col. John D. Reardon, generally called the Wilcox Site Board, to investigate various locations. After receiving the site board's recommendation, in March 1938, Arnold and Westover recommended the site east of Ogden Arsenal for one of the bases. Eventually, the Air Corps constructed bases authorized by the act at Ogden; Fairbanks, Alaska; Holyoke, Massachusetts; Mobile, Alabama; Tampa, Florida; Puerto Rico; and Panama.<sup>25</sup>

### Building Hill Field

Like the concurrently-undertaken construction at the Ogden Arsenal, the Works Progress Administration (WPA) built the first facilities at Ogden Air Depot as a depression-busting project. The initial construction at the base, which occurred between 1938 and 1942, cost more than \$30 million. Hill Field's first facilities included runways, a sewage treatment plant, a radio building, quartermaster facilities, fire and guardhouses, barracks, a chemical storage building, warehouse space, storm sewers, hangars, an engine repair shop, an engine test building, an aircraft reclamation building, an airplane repair shop, an equipment repair building, and hospital facilities.<sup>26</sup>

Among the first buildings completed at Hill Field was Building 1, an Aircraft Operations Hangar. Though preliminary grading of runways began in November 1938, contractors did not begin paving until nearly two years later. At the intersection of runways 3 and 4, the contractor built Building 1, a steel frame brick building designed for use as an aircraft repair hangar. The contractor equipped the ends of the hangar with steel and glass sliding leaf doors which opened most of the end to admit aircraft for repair. Two-story brick

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<sup>24</sup>The information on the eventual selection of the Ogden site comes from Alexander, "Ogden, A Federal Colony," 302-304.

<sup>25</sup>U. S. Air Force, Materiel Command, Ogden Air Logistics Center, "Cultural Resource Management Plan for Hill Air Force Base, Utah," II-46-47.

<sup>26</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 12.

wings north and south of the hangar held administrative offices, and a control tower surmounted the building.<sup>27</sup>

Next to the Operations Hangar, Earl S. Paul, an Ogden contractor built Building 9, a fire station. A two-story "V" shaped structure, Building 9 had exterior walls of yellow brick. Built in two sections, one 76 x 32 which served administrative and operational functions and the other 49 x 37 which housed fire trucks and other emergency equipment. In recent years, the Air Force added a watch tower facing the flight line to offer early detection of hazards.<sup>28</sup>

In line with general Air Corps practice, the command at Hill Air Force Base (then called Hill Field) was given a different name than the air field itself. First designated as an auxiliary depot for Sacramento Air Depot, the command was called Ogden Air Depot. On February 1, 1943, the Army Air Forces (as the Air Corps was renamed in 1941) elevated the command to status equal to Sacramento and redesignated it as the Ogden Air Depot Control Area Command.<sup>29</sup>

### Taking the Base into World War II

Col. (later Brig. Gen.) Morris Berman assumed command of the still unfinished air depot and of Hill Field on November 7, 1940. Berman, who remained in command until June 26, 1944, set up his headquarters in a temporary building containing six pints of red ink, two dozen erasers, and a number of packing crates. Whether the Air Corps furnished red ink before black because it expected the depot to run a deficit is unclear, but in the absence of proper desks the depot personnel used the packing crates for typewriter tables. Heated by an old potbellied stove, the sides of the cracked temporary administration building acted more like screens than walls as they drew in sand flung about by the harsh winds. In the spring Berman and other employees sloshed through mud.<sup>30</sup>

Nevertheless, in January 1941 Berman began accepting shipments from Fort Douglas and from Sacramento. Because of the lack of completed storage facilities at the depot, Berman had to lease a building south of Hill Field in Bountiful to house the supplies that began pouring in.<sup>31</sup>

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<sup>27</sup>Mary Troutman, "Historic American Engineering Record, Hill Field, Aircraft Operations Hangar," HAER No. UT-85-A. (Copy in the possession of the author).

<sup>28</sup>Mary Troutman, "Historic American Engineering Record, Hill Field, Fire Station # 1 & Communications Center," HAER No. UT-85-C.

<sup>29</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 13.

<sup>30</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 13.

<sup>31</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 13.

One of the earliest employees, Clarence Nelson, commented on conditions in the warehouses where the Air Corps stored these supplies. Nelson remembered starting work on January 2, 1942 during one of the most severe winters on record. Nelson's supervisor assigned him to Warehouse 7 where he had to sweep out the snow three times a day. Nelson thought the building, warmed only by a small electric heater, the "coldest place south of Alaska." At the time the warehouse had no fork lifts, electric cranes, or even large ropes. Nelson and his co-workers had to fill orders by humping and dragging out of the building the aircraft engines, machine shop equipment, and training supplies stored there.<sup>32</sup>

More than a year passed after Berman took command before the runways offered more than emergency landing facilities. Nevertheless, as world conditions heated up, even though the field offered no night lighting arrays, the Air Training Command had to use the field for its operations.

In the meantime, Berman began to scour intermountain labor markets looking for employees. The Civil Service Commission had failed to conduct examinations in the Ogden area and had no lists of qualified personnel. Berman raided other depots for workers, scheduled an examination to fill the civil service register, and offered to train local people who agreed to take jobs at Hill Field. By early December 1941, Berman's command included 1,639 civilian and about 250 military personnel.<sup>33</sup>

Because of the primitive working conditions, he found that many of those who transferred from other depots quickly left for more pleasant surroundings. The combination of wind, alternating mud and dust, uncompleted buildings, and lack of office supplies led many to seek greener pastures elsewhere. Berman succeeded in recruiting employees because by 1940 Utah's unemployment had sunk to nearly 10 percent from a low of 6 percent in 1936.<sup>34</sup>

Discouraged but unbowed by the adverse conditions, Berman and his family suffered along with others at the base. At first they moved into temporary quarters at the Ogden Arsenal. Not until June 12, 1941 could they move into the Field Officer's Quarters at Hill Field.<sup>35</sup>

### World War II and the Expansion of Hill Field

In the meantime, war began to engulf the world. The relentless Japanese war machine in the Pacific disrupted American supply lines and placed further demands on Hill Field.

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<sup>32</sup>U. S. Air Force, Materiel Command, Ogden Air Logistics Center, "Cultural Resource Management Plan for Hill Air Force Base, Utah," II-59-60.

<sup>33</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 13.

<sup>34</sup>Rice, Ogden Air Materiel Area, 16-17.

<sup>35</sup>Rice, Ogden Air Materiel Area, 12.

The Japanese conquest of the Philippines forced ships bound for the islands with supplies to return to the United States. In spite of the overcrowded and unfinished warehouses, many tons of supplies descended on Hill Field. Adding to Berman's woes, the fear of possible invasion of the American mainland led the War Department to order the dispersal to the interior many of the planes previously stationed on the West Coast. Many ended up at Hill where icy weather and knee-deep snow assaulted the planes stored in the open, freezing their wheels so tightly that workers had to move them on skids.<sup>36</sup>

When we think of a World War II air base, we generally envision runways, hangars, briefing rooms, and barracks, made familiar by action-adventure films such as Twelve O'Clock High with Gregory Peck and Command Decision with Clark Gable. Hill Field had such facilities, but its major mission consisted of receiving, storing, and supplying air materiel and maintaining and repairing airplanes and other materiel. The region it served consisted at first of Washington, Oregon, Idaho, and Utah. As a back-up depot for Sacramento, it also served California. During World War II, it drew in and repaired airplanes from the Pacific Theatre of operations as well.<sup>37</sup>

To meet the demand for personnel to operate the supply, maintenance, and training facilities at Hill Field, the War Department inaugurated a crash recruitment program. In 1941 the Air Force tested 17,000 high school students, from which it selected 150 for schooling as mechanic learners. Most learned to repair engines. Shortly after the war began the government lifted a previous personnel ceiling by authorizing the base to employ 400 military and 2,700 civilian personnel. In January 1942 it eased job requirements. New regulations allowed Hill Field to hire men unfit for military service and to employ women for physically demanding jobs such as sheet metal work, welding, and aircraft engine repair. In the long run, women employees, many of whom had never before worked outside the home, became the backbone of America's home-front work force.<sup>38</sup>

As the wartime-generated demand for employees escalated so did the efforts to recruit them. By July 1942 the base command had begun to solicit new workers throughout the western states. Eventually Berman's employment campaign stretched into the midwest and even into a few eastern states. By March 1943, payroll at the base reached its all time high, 21,780 employees--6,000 military and 15,780 civilians.<sup>39</sup>

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<sup>36</sup>U. S. Air Force, Materiel Command, Ogden Air Logistics Center, "Cultural Resource Management Plan for Hill Air Force Base, Utah," 2:66.

<sup>37</sup>Rice, History of Ogden Air Materiel Area, 9-10.

<sup>38</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 13-14; Rice, History of Ogden Air Materiel Area, 16-21. For a general treatment of the employment of women in Utah's labor force see: Antonette Chambers Noble, "Utah's Rosies: Women in the Utah War Industries during World War II," Utah Historical Quarterly, 59 (Spring 1991): 123-145.

<sup>39</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 13-14.

The influx of these employees into the Ogden area complicated the unprecedented demand for housing. Both the federal government and private enterprise rushed in to try to fill the need. The Ogden Chamber of Commerce which had worked so effectively for the establishment of the air depot set up a house registration bureau in May 1941. The Church of Jesus Christ of Latter-day Saints assisted in finding rooms in the homes of local families. Various housing projects and trailer parks followed on the heels of the first--Grand View Acres in South Ogden. By November 1942, on-base dormitories had begun to offer rooms to single employees. Called Hillcrest Village, the dormitories consisted of rows of ungainly two-story barn-like structures.<sup>40</sup>

Under wartime conditions, as at other installations, many employees who lived at some distance from Hill Field found the commute an almost insurmountable obstacle. Rationing and shortages of gasoline, auto parts, and tires caused by wartime military demands left employees with few alternatives. Federal, state, and local officials stepped in to ease the burden by inaugurating a bus system that carried passengers between the base and cities and towns from Ogden to Salt Lake City. The command also offered its help in organizing ride sharing arrangements.<sup>41</sup>

Even before World War II, the base Depot Maintenance Department (later renamed the Directorate of Maintenance) began to accept materiel in need of repair. In the fall of 1941 under the direction of Maj. (later Col.) Russell J. Minty, maintenance undertook a number of projects such as winterizing aircraft for operations in Alaska, repairing bombsights, and fixing parachutes.<sup>42</sup>

The day after the Pearl Harbor bombing, however, the directorate shifted into high gear by inaugurating a twenty-four hour a day, three-shift, operation. Laboring under Minty's direction, various divisions of the Maintenance Directorate, including aircraft shop workers under General Superintendent James W. Haynie, launched a series of ambitious projects. The most spectacular included the rehabilitation of engines, airframes, instruments, and other parts on battle weary aircraft--particularly B-26 Marauders, P-39 Airacobras, P-40 Warhawks, B-24 Liberators, P-47 Thunderbolts, and A-20 Havocs.<sup>43</sup>

Perhaps the work on the Convair B-24 heavy bomber epitomized the dedication and creativity of maintenance personnel. Powered by 4 Pratt & Whitney R1830 radial engines, most models of the B-24 carried a crew of 12. Designed for strategic bombing and armed with 10-.50 cal. machine guns, the B-24 could carry a load of up to 8,000 lbs. of bombs

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<sup>40</sup>Rice, History of Ogden Air Materiel Area, 21-23; James B. Allen, "Crisis on the Homefront: The Federal Government and Utah's Defense Housing During World War II," Pacific Historical Review 38 (November 1969): 407-28.

<sup>41</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 14.

<sup>42</sup>Rice, History of Ogden Air Materiel Area, 28-29.

<sup>43</sup>Rice, History of Ogden Air Materiel Area, 26-30, 37-40.

over a range of 3,200 miles. Since it operated in all theatres during World War II, the B-24 seemed to many observers more capable but also more difficult to fly than the more famous B-17. Since Convair built more than 19,000 B-24s (reportedly a larger number than any other heavy bomber used during World War II) between 1941 and 1944, and since the Army Air Forces used them so widely, many returned mashed and broken by machine gun, cannon, and anti-aircraft shells.<sup>44</sup>

In February 1943, maintenance set up its largest single aircraft production project of World War II. In a mission that earned plaudits from the Army Times, the maintenance directorate ran the B-24s through what was reportedly the "first progressive assembly line" at any Air Force base. By July 1943 maintenance had reached its goal of turning one B-24 per day off the assembly line. In achieving the goal, the staff developed and refined its production-line techniques in engine, aircraft, and parts repair.<sup>45</sup>

Justly famous throughout the Air Force, Hill Field's maintenance directorate drew in Liberators from as far away as India and Australia. One of them, the battle scarred "Eager Beaver," had flown 77 bombing missions.<sup>46</sup>

As the Liberators ran down the assembly line, the Equipment Repair Shop fixed flight instruments, bomb sights, and other sensitive equipment. Since the shop contained so much classified equipment, the command took pains to keep its operations secret. Instead of regular windows, light poured in through translucent glass blocks. The building's heavy concrete door resisted potential assaults. Using a peephole in the fence, guards screened out those with no legitimate reason to enter. To maintain security, repair shop employees packed items for shipment in sealed containers shaped so they did not reveal the enclosed parts.<sup>47</sup>

Throughout the war, the supply directorate received and shipped a department-store sized collection of air materiel. Such items as parachutes, bomb sights, and bomber jackets only touched the surface of the inventory.<sup>48</sup>

As the level of fighting escalated in the Pacific in 1945, the Directorate of Supply found itself even busier than before. During the first four months of 1945, supply handled

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<sup>44</sup>On the specifications of the B-24 see: Donald W. Klinko, Aircraft, Engine, and Missile Maintenance at Tinker Air Force Base, Oklahoma, 1942-1992 (Tinker Air Force Base, OK: Office of History, 1992), 17; and James C. Fahey, ed. U. S. Army Aircraft (Heavier-than-air), 1908-1946 (Washington: Ships and Aircraft, 1946), 22-23, 44.

<sup>45</sup>Rice, History of Ogden Air Materiel Area, 29-30.

<sup>46</sup>Rice, History of Ogden Air Materiel Area, 30.

<sup>47</sup>U. S. Air Force, Materiel Command, Ogden Air Logistics Center. "Cultural Resource Management Plan for Hill Air Force Base, Utah." 2:61-62.

<sup>48</sup>Rice, History of Ogden Air Materiel Area, 25-27; Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 16.



3,240 carloads—more than twice the amount handled during the first four months of 1944.<sup>49</sup>

Col. Berman's command also included several subdepots such as No. 317 located at Wendover Field in Tooele County near the Utah-Nevada border. Activated on April 25, 1942, Wendover served as a site for research and development as well as for a training base for B-17 and B-29 crews. Perhaps its most controversial trainees were the top secret 509th Composite Group headed by Col. Paul W. Tibbets, Jr. After training at Wendover and moving to Tinian Island in the western Pacific, on August 6, 1945 Tibbets's plane, the "Enola Gay" (named for his mother) dropped a uranium bomb on Hiroshima, Japan. Three days later, another 509th plane, "Bock's Car," piloted by Maj. Charles W. Sweeney dropped a plutonium bomb on Nagasaki. The atom bombs killed thousands of people in the two cities. According to Emperor Hirohito, this bombing coupled with the Soviet Union's declaration of war against Japan forced his nation's surrender and the end of World War II.<sup>50</sup>

### Between the Wars:

Even before World War II ended the Air Force began to return unneeded materiel to Hill and other installations for storage. Some of the earliest casualties of technological progress included a few L-2B Grasshoppers, a single engine bi-wing liaison plane. With the Grasshoppers as with other airplanes, employees at Hill, removed their electronic equipment, pickled their bodies and engines, painted their windows, and otherwise prepared them for storage. They stacked the pickled Grasshoppers on their noses like soda straws in an old fashioned container. Other planes stored at Hill included the B-24 Liberators, Stearman PT-13 Kaydet Primary Trainers, B-29 Superfortresses, B-26 Invaders, P-61 Black Widows, P-51 Mustangs, and P-47N Thunderbolts. By 1947 Hill had become the site for the storage of more than \$200 million worth of airplanes.<sup>51</sup>

As demobilization of the Air Force continued, work at Hill assumed a different pace. Some workers scurried about storing airplanes while others prepared materiel for the biggest war surplus sales in the nation's history. In November 1946, at one extreme, the base began selling \$23,000 radial airplane engines as scrap to companies like Reynolds Metal for \$22.50 each. On the average, the government realized 22 to 27 cents on the dollar for its surplus

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<sup>49</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 16.

<sup>50</sup>Rice, History of Ogden Air Materiel Area, 33-34; Robert P. Newman, "Ending the War with Japan: Paul Nitze's 'Early Surrender' Counterfactual," Pacific Historical Review 64 (May 1995): 167-194.

<sup>51</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 17-18; "Section Two: Hill Air Force Base Survey Report," 69-70; Rice, History of Ogden Air Materiel Area, 39-44.

materiel.<sup>52</sup>

After the war, many of Hill's regular missions consisted of training and modifying war materiel for the peacetime Air Force. Hill Field personnel modified B-29s and B-27s for photographic missions, and it reconditioned planes to tow targets. It undertook the repair of parachutes and flying suits, aircraft instruments, breathing equipment, and automotive vehicles.<sup>53</sup>

Following the war, employment at Hill declined rapidly. By the end of December 1945 only about 3,800 civilian and military personnel worked at the installation. By January 1947, employment had declined to 2,372.<sup>54</sup>

Though some feared that the decline in employment presaged a closing of the base, on July 22, 1946, the Air Materiel Command (AMC) made Hill into a key component of its peacetime logistic services by designating it Ogden Air Materiel Area (OOAMA--the two "O's" because each of the areas had five letters in its acronym). With the designation, the base assumed responsibilities for maintenance, storage, shipment, and repair for a region including Montana, Wyoming, Colorado, Utah, Nevada, Idaho, North and South Dakota, and the western portions of Oregon and Washington. Changes in Air Materiel Area boundaries later deleted Oregon and Nevada and added all of Washington. In line with the policies of the Air Force which Congress designated an independent branch in 1947, Hill Field became Hill Air Force Base in February 1948.<sup>55</sup>

#### The Cold War and the Hot War in Korea:

Rumors about closing down Hill came to abrupt halt after events again changed the balance of the world's military power following World War II. The devastation of Germany, Japan, Britain, and France and the civil war in China left the United States and the Soviet Union as the world's major military powers. The power vacuum in Europe and Asia coupled with nationalism, anti-imperialism, Russia's desire for security, the expansion of communism, and a host of other motives led almost inexorably to the division of the world into East and West and to a world-wide conflict we call the Cold War.

Hill's involvement in the Cold War began as early as 1948. The United States government called on maintenance to equip 30 AT-11 Beech Kansas trainers with bombsights and stabilizers for shipment to Turkey as part of the effort to halt communist insurgency in the eastern Mediterranean. After the Soviets blockaded rail, barge, and highway traffic in

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<sup>52</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 17.

<sup>53</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 18.

<sup>54</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 17-18.

<sup>55</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 17; Rice, History of Ogden Air Materiel Area, 36.

and out of Berlin in June 1948, Hill shipped materiel and trained replacement crews for the Berlin Airlift.<sup>56</sup>

Then on June 25, 1950 the furies broke loose in Asia. Soviet-supplied North Korean troops invaded South Korea, which the United States considered part of its security perimeter. At the suggestion of George Kennan, head of the State Department's Policy Planning Staff and Secretary of State Dean Acheson, the United States had adopted a policy of containment through which it expected to apply counterforce against any diplomatic--and eventually military--expansion supported by the Soviet Union.

On July 10 the Defense Department ordered an end to disposal operations. Anticipating the need for logistical support, the Defense Department reversed a previous decision and authorized the construction of a modern 10,000 foot runway and new taxiways at the base. Hill's storage and maintenance directorates began unpickling and restoring B-26s. Before the end of the Korean War, Hill's directorate of maintenance had reconditioned more than 1,000 of the Invaders. F-86 Sabrejets, dogfighting with Chinese MiG-15s in Korea's skies, captured the press's imagination, but the Invaders did the dirt work during the Korean War and even in the later Vietnam conflict.<sup>57</sup>

An increase in employment skyrocketed Hill from near standby status to Utah's largest employer. Seeking highly skilled specialists in competition with private industry and other installations, the base recruited new mechanic learners to supply workers for the maintenance directorate. Managers again begged women to return to the work force, until 28 percent of the staff consisted of career minded wives, widows, and singles. Civilian employment rose from 3,656 in June 1950 to 12,210 in August 1952 before leveling out at about 11,000 as the Korean War ended in 1953.<sup>58</sup>

As the United States moved into the jet and missile age, AMC decentralized its operations, at the time assigning new missions to Hill. In June 1952, OOAMA assumed responsibility for the SM-62 Snark missile and the Northrop F-89 Scorpion jet. Increasingly after the mid-1950s Hill's maintenance and supply missions turned to the servicing of missiles such as the Genie air-to-air rocket, the BOMARC, and America's Cold War standby--the Minuteman. The Air Force retired its war-weary World War II fighters and replaced them with increasingly sophisticated jet aircraft such as the F-4 Phantom, and more recently the F-101 Voodoo and F-16 Fighting Falcon.<sup>59</sup>

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<sup>56</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 18.

<sup>57</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 20-21.

<sup>58</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 19; Rice, History of Ogden Air Materiel Area, 103.

<sup>59</sup>Arrington, Alexander, and Erb, "Ogden Air Materiel Area," 20, 24; Charles G. Hibbard, History of Hill Air Force Base (Hill Air Force Base, UT: History Office Ogden Air Logistics Center, 1988), 130, 259.

At the same time, the base command began to adopt a different strategy for getting its work done. Unable to function effectively under the rollercoaster-like conditions engendered by the decline in employment after World War II and the steep buildup during the Korean War, the maintenance directorate began contracting with local companies. By 1958, local businesses accounted for 55 percent of the base's workload.<sup>60</sup>

By the early 1950s, the missions assigned to Hill AFB had simply become too large for the space it occupied. The AMC had to farm out to other bases some of Ogden's missions such as programs to train personnel in the storage of ammunition, and indeed the storage itself. In order to carry out the Air Force's mission for the storage of ammunition in the interior United States, OOAMA simply needed more space.

Meanwhile, by 1954 the Army Ordnance Department needed more space for the storage of munitions and for the repair of war materiel than the neighboring Ogden Arsenal afforded as well. Hemmed in by Hill AFB to the east, growing urban areas to the south and west, and the Weber River canyon to the north, Ogden Arsenal could perform its mission no easier than OOAMA. At the same time, Tooele County's west desert offered additional space. This congruence of needs led to an agreement by which on April 1, 1955, the Department of Defense transferred the Arsenal's property to Hill AFB. At the same time, it sent many of the Arsenal's missions to Tooele Ordnance Depot (later renamed Tooele Army Depot).<sup>61</sup> Worth more than \$17 million and encompassing nearly 2,717 acres, the acquisition added 75 percent more area to Hill Air Force Base.<sup>62</sup>

### Above and Beyond

By 1974, Hill AFB had assumed a status in the Air Force's command structure which ranked it as one of a handful of the most important links in America's air defense. That year the Tactical Air Command assigned worldwide management of the F-16 Fighting Falcon to Hill AFB, moving a Falcon wing to Hill at the same time. In April the Air Logistics Command recognized the world-wide responsibility carried at Ogden and four other similar commands by redesignating them as Air Logistic Centers.<sup>63</sup>

The 1990s, the end of the Cold War, and the collapse of the Soviet Union have brought some downsizing at the Ogden Air Logistics Center at Hill Air Force Base. Nevertheless, in 1995 although the Base Closure and Realignment Commission decided to make some changes, it also decided to leave the OALC mission virtually in tact. Hill AFB

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<sup>60</sup>Rice, History of Ogden Air Materiel Area, 107,

<sup>61</sup>Rice, History of Ogden Air Materiel Area, 183-84.

<sup>62</sup>Helen Rice, History of Ogden Air Materiel Area, Hill Air Force Base, 1934-1960. 2 vols. [Ogden, UT: Air Force Logistics Command], 1963), 2:62

<sup>63</sup>Hibbard, History of Hill Air Force Base, 251-52.

remains a vital link in America's air defense, and until 1994 it remained Utah's largest employer.

### A Meaning for the Hill Air Force Base Experience

As New Mexico Historian Gerald Nash has argued the United States has passed through a number of economic changes since it became a nation in the late 18th century. The West--and with it Utah--participated in these changes as its economy integrated with the remainder of the nation beginning in the 1880s. With the expansion of extractive industries such as mining and agriculture and the integration into the nation's railroad network, "westerners built a colonial economy based on the export of raw materials."<sup>64</sup> Nash argues that the colonial economy ended in the depression of the 1930s, that World War II reshaped the economy, and that the west emerged from the war with a new economy engineered by "the federal government and private enterprise." Basing his analysis of Utah conditions on the work of Leonard Arrington, Eugene Erb, Archer Durham, Anthony Cluff, and this author, Nash argues that construction of defense installations dwarfed the output of the previous colonial economy.<sup>65</sup>

It is my belief that Nash is essentially right about the changes that took place, but that he begins his analysis of the transformation at the wrong point. Initial construction at Hill Field, like that at the Ogden Arsenal, began during the 1930s under the auspices of various New Deal agencies, especially the Works Progress Administration (WPA). Employment in federally-sponsored public works projects reduced Utah's unemployment from a high of 35.9 percent in 1933 to 6 percent in 1936. As the federal government tried to reduce its involvement in the economy and reduce the federal deficit, unemployment reached a high of 10 percent in 1940. Then a renewed construction effort, especially at defense installations like Hill Field reduced it to 4.1 percent in 1941, the lowest since 1929.<sup>66</sup> We should note that even the 1941 employment was generally pre-war since the United States did not enter the war until December.

At the same time, Nash argues, the federal government revitalized private corporations by offering contracts for war materiel and construction.<sup>67</sup> A survey of the contractors in the early construction at Hill Air Force Base not undertaken by the WPA reveals a close connection between government and business. The list includes: John H. Haslem, George A.

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<sup>64</sup>Gerald D. Nash, World War II and the West: Reshaping the Economy (Lincoln: University of Nebraska Press, 1990), 3.

<sup>65</sup>Nash, World War II and the West, 4-6.

<sup>66</sup>See chart in Thomas G. Alexander, Utah, The Right Place: the Official Centennial History (Layton: Gibbs Smith, 1995), 323.

<sup>67</sup>Nash, World War II and the West, 8-11.

Whitmeyer & Sons, Mead & Mount Construction Company, Peter Keiwit & Sons, and Earl S. Paul.<sup>68</sup>

In other words, the construction and operation of Hill Air Force Base was part of a larger shift in the basic economy of Utah and the West from a primary reliance on the colonial export of raw materials and semi-manufactured goods to a primary reliance on federal installations and contracts. In his book, The American West Transformed, Nash argues that this change marked the end of the west as a colonial economy.<sup>69</sup> I would argue that instead of ending the colonial economy what the transformation did was to change Utah's, and probably the West's, economy from a colonial economy based on Wall Street to a colonial economy based in Washington. This new colonial economy continued to dominate Utah until a new transformation that accompanied the end of the Cold War during the 1980s.

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<sup>68</sup>Based on Mary Troutman, "Historic American Engineering" surveys of Hill Air Force Buildings. Troutman found that she could not identify most of the contractors. It seems probable that many of these were constructed by the WPA.

<sup>69</sup>Gerald D. Nash, The American West Transformed: The Impact of the Second World War (Bloomington: University of Indiana Press, 1985), 201.

**HILL FIELD:**  
**Supporting the War Effort, 1938-1945**

The dual mission of Hill Field during and after World War II was to repair, maintain, and store aircraft as well as to receive, store, repair, and ship air materiel. Workers at Hill Field serviced bombers (such as B-17s and B-24s), fighter escorts (such as P-47s and P-51s),<sup>1</sup> and a variety of others (such as A-20 attack planes. Preliminary grading for the runways that served Hill Field began in November 1938 as a WPA project. However, these runways were not paved until almost two years later. Once the final layout and survey for the runway paving was finalized in July 1940, construction could begin on the installations many important structures that would serve its mission as a major support facility for the Army Air Corps during World War II.

**Maintenance and Repair of Aircraft**

Building 225, an immense steel and brick aircraft repair hangar, was the hub of aircraft maintenance operations at Hill Field during World War II. This building, called Airplane Repair Hangars #1-#4, housed major repair facilities for both fighter escort and bomber aircraft, and generally provided shelter for planes that required major repair, routine maintenance, or preparation for long term storage. The structure is divided into two identical wings: the east wing, completed in March 1942, and the west wing, finished by January of the following year. The massing of the building is broken into five sections: the four corners of the building each contain a separate hangar that is covered with a rounded hangar roof, and the central section of the building is an open area with a flat roof. Segmentally-arched steel trusses support the roof line and the ends of the hangars are equipped with sliding leaf doors made of steel and glass which run most of the length of the elevation. Just above these doors, at the center of the hatched elevation, is a small tail door which opens to accommodate the tails of larger aircraft. Also, two-story brick wings holding administrative offices are located along the east and west elevations of the hangars.

During the war years, Building 225 served as the center of an aircraft maintenance system which closely linked this building's operations with other specialized maintenance and repair facilities to the north and southeast. A smooth operation did not emerge immediately, however. Aircraft repair quotas set by Air Command were rarely met in the beginning months of World War II because needed materials were often difficult to procure, and shops could not obtain the majority of special tools necessary.

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<sup>1</sup>World War II-era fighter escorts were small single-engine planes that usually carried only one person. They were fast and maneuverable, and escorted bomber aircraft to their targets, intercepting any incoming enemy aircraft. They were usually armed with machine guns and a few small bombs.

Without other options, workers at Hill Field designed and manufactured many of these items. As the war progressed, these obstacles began to subside. A shortage of special parts, tools, equipment, and adequate working space continued to present challenges, but in gradually reduced proportions. Many items continued to be manufactured by the maintenance shops as the need for them became sufficiently urgent. As more facilities came on-line, the personnel at Hill Field overcame these initial difficulties, as well as others related to the complex task of building a major maintenance facility from-the-ground-up. Ultimately, the large-scale maintenance operations at Hill Field took shape through trial and error over the first couple years of the war.

At the beginning of World War II, crews in Building 225 worked on a single plane at a time in each docking station and all repairs were made on the stationary plane. As the war progressed, however, Hill Field's officers and personnel explored and developed more efficient assembly line methods. Crews inspected and dismantled planes in the massive hangars, sent specific parts like engines, propellers, and flight instruments to be repaired (or requested their manufacture) in surrounding shops, and finally reassembled the repaired aircraft parts and body in the hangars. In efforts to increase efficient production methods, the Production Control Branch carefully monitored and controlled all activity in the hangars. The status of aircraft and parts could be accurately determined at any of the various stages of production. The Branch also obtained and disseminated technical information to workers. As the Production Control Branch gathered statistics, employees and materials could be more efficiently allocated among the departments. Efficiency and coordinated effort became important goals for operations at Hill Field.

Coordination between departments came gradually as the units began to understand their relationship to each other and as specialized labor and production line methods became widespread. Even with careful planning, though, operations progressed at different rates in each department. Frequent rush orders or parts shortages caused congestion in the production lines that disrupted interdepartmental flow.

The Inspection Section, established in January 1942 under P. W. Buller, was located in the Annex of Repair Hangar #1 (Building 225). This important section of the maintenance and repair process encountered difficulties because unskilled personnel were often assigned as inspectors. This was largely due to rapid turnover of personnel caused by men being drafted into military service. The best inspectors were usually experienced mechanics, and were recruited whenever possible, but in reality few were available. The inspection of aircraft was not a casual matter; workers were required to be on guard to recognize and correct all faults, however small. Techniques were developed to complete predictable, thorough, efficient inspections, commonly referred to as "Shake-Downs." Inspections took place at the beginning and end of the assembly lines in the Aircraft Repair Hangars. Each plane was divided into several sections, and specially trained inspectors investigated each system. The fuel system, oxygen system, empennage (tail area), and rigging were inspected in a sequence that provided minimum lost motion and duplication of effort. At times, confusion was experienced through conflicting



specifications and Technical Orders. These questions were referred to Air Service Command for clarification.

A plane requiring maintenance would be brought into Building 225 for major handling by inspection and repair crews, using scaffolding to accomplish the initial steps in the maintenance process. Scaffolding stands used in the hangars were made of prefabricated "Dexion" components that could be assembled into virtually any size or shape because long angles with holes cut in them accommodated bolts at various locations. The long beams provided space for several technicians to work on an airplane simultaneously, and the height of the beam could be adjusted with a jack. If a plane arrived that did not fit one of the existing stands, one was either modified to the right height/length or a new one was assembled. The stands were used during both the early, "static" repair period and the assembly line era.

During World War II, Boeing B-24 bombers were the first airplanes repaired by an assembly line process at Hill Field, with the planes moving through successive stations for specialized tasks instead of receiving all repairs at one dock. This increased efficiency so much that all hangars were subsequently organized into multiple assembly lines that were each designed for a specific type of aircraft. Most of these World War II-era planes traveled through the assembly line tail first, since they were more easily moved backwards than forwards. In order to complete the Air Command quota of 13 planes each month, the assembly line was moved every eight hours, with approximately 139 people working the line at any given time. As work progressed, three stations were added, making a total of 12, that established a finer breakdown of tasks and enabled less experienced personnel to contribute to the process. Along with the B-24s, the first P-47 fighter escorts were overhauled in the Aircraft Repair Hangars in 1943.

The typical assembly-line routine developed in Building 225 during the war is represented by the work done on A-20 attack aircraft in 1945. First, workers cleaned each aircraft with high pressure cleaners in Hangar #4. Next, they moved the planes to an Inspection Station for a complete "Shake-Down" inspection. After inspection, workers sent them through a series of 12 specialized stations for disassembly, repair, and reassembly. Armament was removed, and any necessary repairs were made to the engine, fuel cell, electrical and hydraulic systems, radio, and other parts. The completed aircraft was inspected again prior to its release to Building 1 for in-flight testing.

Assisting in the maintenance and repair process, Buildings 11 and 266 comprised the Paint, Oil, and Dope House and the Spray Pool Building, respectively. These buildings served workers whose responsibilities included the regular lubrication of all moving parts of the planes to minimize friction and related deterioration of parts, and the painting of exposed metal parts to prevent dangerous rust damage. Chemicals stored and utilized in these buildings were necessary components for the maintenance and repair of aircraft at Hill Field.<sup>2</sup>

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<sup>2</sup> See the section on storage of aircraft at Hill Field for more details on these buildings and their purposes.

The buildings to the southeast and a couple to the north of Building 225 served more specialized aircraft repair tasks. Crews removed aircraft engines from planes in the Aircraft Repair Hangars (Building 225) and brought them to the Engine Repair Building (Building 265) for disassembly and complete overhaul. Completed engines were transferred to the Engine Test Cells (Buildings 267 and 268) for diagnostic testing before reinstallation on planes in the Aircraft Repair Hangars.

Building 265 was the primary engine repair facility at Hill Field and it housed most engine repair operations. Construction crews completed the building by the end of December 1941, just weeks after the bombing of Pearl Harbor; it was one of the first aircraft repair and maintenance facilities constructed at Hill Field. It is a large, rectangular industrial building with no distinguishing stylistic elements located immediately to the southeast of Building 225. The facility's exterior wall consists of a concrete base and a continuous band of ribbon windows and vertical corrugated metal siding under the cantilevered roof. The front entrance is marked by two pairs of beige brick piers with a series of industrial steel sash windows which extend to the metal siding. Closely associated with this structure, the Engine Repair Section composed five branches: the Cylinder Chrome Plating Branch, the Disassembly and Cleaning Branch, the Engine Accessories Branch, the Engine Assembly Branch, and the Parts Overhaul Branch. Command created additional temporary units and sub-units in accordance with various workload demands over the years, and located most of them within Building 265.

The Engine Repair Building experienced many adjustments to its process layout during its first months of service. Leadership instigated an assembly line method, with the metal covered work benches initially aligned perpendicular to the main direction of engine movement. They gradually replaced the metal benches with hardwood-topped benches, which greatly lessened damage to delicate engine parts. A rearrangement of production lines occurred to encourage greater efficiency along the assembly line, with individual work benches shifted to be parallel to the main engine progression.

The majority of work in the Engine Repair Building involved the complete disassembly, overhaul, and reassembly of entire aircraft engines. Workers processed approximately 50 such engines in August 1942. Production increased rapidly, though; within five months, they were completing and testing 150 engines each month. Workers in Building 265 also performed periodic inspection and calibration tests, and prepared engines for storage by treating them with ethyl cellulose to prevent corrosion. Partial engine components were also brought to Building 265 for repair.

Personnel first disassembled and thoroughly cleaned aircraft engines to be overhauled in Building 265. They removed surface carbon by applying a tar-acid oil with brushes by hand. Next, they placed engines in a soaking tank system that remained in use for many years after the end of World War II. Until spray booths and air-pressure guns were introduced in 1943, all cleaning was done by hand in open tanks. Workers rarely used sand blasting because it required much extra work to mask and protect delicate bearings and finished surfaces.

The Engine Repair Building also housed the Carburetor Branch, established in January 1942 under Mr. R. H. Engleske and organized to overhaul, repair, and calibrate

all types of aircraft carburetors. The group spent the first five months of its existence recruiting and training new personnel, and gathering material, equipment, parts, and tools. Initial instruction for new workers lasted three months; miscellaneous types of carburetors available in the shop were provided for hands-on training. Some of the aircraft expected to be repaired by the Carburetor Branch used a new Holley & Stromberg pressure carburetor which could not be procured for training purposes. Mr. Mondell Bennett, assistant foreman of the new shop, provided schematic illustrations and lectured about the processes involved in their repair.

The Carburetor Branch used one 9-inch lathe and several sheet-metal covered work benches that occupied about 600 square feet in the Engine Repair Building. They performed minor Technical Order modifications on various float-type carburetors for their first project. In the beginning, technicians worked on a single, stationary carburetor until it was completed. After six months of operations, though, a horseshoe-shaped progressive assembly line replaced rows of individual work benches. This new layout reduced overhauling time on carburetors from 16 hours to less than seven hours each.

In 1945, officers organized a new engine cylinder overhaul and preparation line in the Engine Repair Building. Technicians processed grinding and honing machines for cylinders and valves on a production line conveyor system. They pickled cylinders with an acid solution that removed surface scale and oxides prior to plating them with chrome. As the war effort increased, assembly line advancements and organizational refinements improved the speed and quality of repair and maintenance work in the Engine Repair Building.

The Final Assembly Unit of the Engine Repair Section was established in early 1942, with approximately 30 employees supervised by Mr. V. E. Taylor. In the beginning, two shifts processed 2-3 engines per day; workers overhauled and assembled various types of engines, including Pratt & Whitney R-1 830, R-2800, and R-2600 models. Most of the employees had no previous experience with aircraft engines so they referenced Air Command Technical Orders (written instructions provided by the Production Control Division) for each step of the process.

After a few weeks of production, command organized a third shift and reorganized the interior of the building in order to accommodate a much more efficient assembly line process. Each worker specialized in a distinct stage of the assembly on a particular engine type. One supervisor monitored the operations of each engine type. As the final assembly work became more and more specialized, the quality and efficiency improved and became more uniform. The department grew rapidly, and new workers were trained much more rapidly and predictably on single assembly tasks than what was initially achieved by trying to train them on all aspects of assembling various engines.

The Machine Tool Unit, located in Building 272, manufactured and repaired tools used by mechanics in Building 265. The crew experienced many difficulties during World War II because competition with other defense activities eliminated the possibility of obtaining experienced aircraft engine machinists. In 1942, the foreman was the only worker familiar with aircraft overhaul work, and available equipment was very limited. Each engine being repaired in Building 265 required different jigs and unique procedures

for accurate and precise work. Many jigs were unavailable, and several on hand were unidentified and unlabeled. Because employees were unfamiliar with their appearance and use, many projects were delayed. Like workers in the Final Assembly Unit, most of the employees referred to the Air Command Technical Orders for each step of the process, and workers did their best to improvise alternative procedures when a prescribed jig was lacking.

Aircraft engines, once repaired, went to Engine Test Buildings #1 and #2 (Buildings 267 and 268). These buildings have individual notations, but they basically function as one building. The buildings are one-and-a-half story, reinforced concrete structures with full basements and flat roofs. Each building contains four engine test cells in separate rooms, work areas, and offices. The two buildings are connected by a one-story administration building, boiler room, and covered walkway and form a very large, irregular U-shape. No windows are present and heavy-duty, explosion-proof doors line the exterior of the original portion of the test facility. The thick concrete walls and absence of windows were engineered to withstand considerable forces, while containing engine noise. The design of the buildings facilitate a sterile and private working environment. Ventilation and noise control were also important considerations in the design of these buildings. An extensive series of blowers and ceiling exhaust vents pervades the buildings. Massive concrete intake stacks with small cooling towers are present over each testing cell. Interior doors, walls, and ceilings are insulated with 2" sound-proofing insulation.

Building 267, the smaller of the two buildings, contains a full basement that has two long, narrow, parallel rooms that are connected by a single narrow tunnel. Skylights over vertical tunnels provides natural light down through the building to these rooms, which contained a machine room and distribution room during the war. Building 268 contains a large final inspection room and locker room. Each test cell in Building 268 is accessible from the exterior by metal rolling doors at each narrow end that are large enough to accommodate aircraft engines. These doors are insulated with several inches of baffling to contain the noise of engine testing operations.

The Engine Test Branch, housed in the Engine Test Buildings, formed in January 1942 with Mr. Arthur R. Smith as acting foreman. At this time, four cells were available in the Engine Test Building but none were ready for use because the necessary equipment had not yet been installed. Depot personnel encountered much difficulty in obtaining needed materials; workers could not test the first engine (a Pratt & Whitney R-2800-5) until three months later. By August 1942, crews worked in twelve test cells, processing approximately 50 engines that month. Their production increased rapidly, though; within five months, they completed and tested 150 engines per month.

In order to perform a test, technicians mounted the engines to the ceiling and floor of each test cell through the use of built-in anchors and attached diagnostic sensors. From the safety of an adjacent control room, they then activated the engines at maximum power, while an instrument panel displayed the status of the engine. Small windows on the interior walls of the testing cells allowed workers to view the testing operations

without being in the same room with the engine. In testing engines in this way, workers fulfilled operations safely and with efficiency.

Minor adjustments to the Engine Test Cells included the addition of an overhead monorail system with spray booths in 1943, and the installation of guard rails in 1949. In 1944, command considered an overhead engine conveyor to take the engines from the test blocks to the Engine Storage Warehouse #16 (currently Building 273). Operations Inspectors believed it would eliminate many of the hazards previously encountered in the manual transportation of newly overhauled and tested engines. The never installed the conveyor, though, according to Hill Field real estate records.

In 1945, Depot command did order Minneapolis-Honeywell Automatic controls for each of the Engine Test Cells after supervisory personnel made several visits to other depots who were using them. These devices provided semi-automatic or automatic controls on the gasoline and oil lines, which significantly improved fuel efficiency and dramatically increased fire safety during the testing process. Test Cell #5 was the first to receive the new equipment, which required 1,350 man-hours to install. The other test cells followed suit; within three months, half of the test cells featured the automatic controls.

Following repair and testing, aircraft engines would either be taken back to the Airplane Repair Hangars (Building 225) for reinstallation on waiting aircraft or transferred to the Engine Storage Warehouse (Building 273) for temporary or long-term storage. Building 273 is a large, square, one-story, industrial structure with a flat roof. The building was constructed in the summer of 1943 from wood frame over a concrete foundation. Exterior walls are covered with wood shingles and feature a continuous rhythm of wide double-hung windows along each facade. Workshops are located along the north wall and administrative spaces are located along the east wall. The rest of the interior is an open, column-filled space used to store aircraft engines and protect them from the elements until they were reunited with their aircraft.

Several other buildings were closely related to the Airplane Repair Hangars and to Hill Field's primary mission to repair and maintain aircraft. Two buildings to the north of the main hangars, Buildings 205 and 214, played important roles in the aircraft maintenance system. Building 205, a one-story, rectangular industrial structure, housed the Hydraulic Repair Branch, established in January 1942 under the supervision of Mr. D. D. Flegal. Workers in the Aircraft Repair Hangars (Building 225) removed wheels and brakes from planes and brought them to Building 205 for disassembly and complete overhaul.

Workers in Building 205 disassembled and repaired or replaced brake rotors and pads. The brakes on pre-World War II aircraft were drum type, but the newer (World War II era) aircraft had brakes with disks. These newer brakes were "anti-skid," which prevented the wheels from locking and tires from blowing out. The system was similar to anti-lock brakes that are commonly used in modern cars today. Both types of brakes were repaired in Building 205. The shop also repaired wheels, for which the major problem was oxidation. Since the wheels were usually made of magnesium, they had a tendency to pock. After repair, the wheels were painted or anodized to prevent corrosion

and then tested. Upon completion of their tasks, mechanics then transferred the wheels and brakes back to the Repair Hangars where they were reinstalled on aircraft. The Hydraulic Repair Branch originally worked in conjunction with this mission to overhaul and repair aircraft wheels, brakes, and struts. Due to a large backlog of reparable items on the field and the extremely limited stock of replacements, however, their mission soon expanded to include all types of hydraulic and vacuum pumps, valves, cylinders, and accumulators. They utilized test stands manufactured at Hill Field to hold their hydraulic testing equipment.

Building 205 also housed the Rubber Repair Branch during World War II. A new "Vita-Cap" Chamber was introduced to the Rubber Repair Branch in mid-1945. This increased production of tires and tubes 50%, and allowed odd size tires and tubes to be repaired at Hill Field for the first time. The chamber capacity of the new equipment accommodated either three 56" tires or five tubes to be repaired simultaneously. Needless to say, Building 205 was a busy place.

Right next door, the Equipment Repair Shop (Building 214) housed navigational, communications, and reconnaissance instrument repair activities. The building's Art Moderne architectural elements, such as the smooth concrete frontispiece at the main entrance, allude to the particularly modern, "high-tech" work taking place within the structure.<sup>3</sup> Auto-pilot and bombing units were manufactured and repaired here. These instruments were installed onto World War II-era B-24 and B-17 Bombers and then tested over the Great Salt Lake. Old railroad tracks served as bombing targets. During flight, mechanics from Building 214 tested the planes for drift, wind, and other factors that would affect the stabilization and targeting abilities of bombing equipment.

Building 214 was designed to provide a clean environment with maximum security. It was one of the first buildings at Hill Field which was air-conditioned. In addition to preventing unauthorized access, all openings were designed to keep out dirt and other foreign matter that could damage delicate navigational and communication equipment. Immobile glass block windows and secured doors were all specially sealed against sand and dust. The original portion of the structure, consisting of an "L"-shaped plan, was constructed with brick and glass block in order to meet stringent security requirements. The original building had no regular windows; the design called for glass block windows to let light in but keep prying eyes out, and heavy concrete doors provided extra security from unauthorized persons entering the building. Also, the entire building was surrounded by a high fence with a remote-controlled gate operated by a guard who was on duty at all times. Anyone entering Building 214 had to be recognized by the guard, who looked through a peephole cut into the fence. Workers brought sensitive pieces of equipment serviced in Building 214 in and out of the building inside sealed containers that did not reveal the size or shape of their contents. Personnel installed classified equipment on aircraft in Buildings 217 and 219 (wooden hangars now

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<sup>3</sup> U. S. Air Force, Materiel Command, Ogden Air Logistics Center, *Cultural Resource Management Plan for Hill Air Force Base, Utah*, prepared by Hardlines: Design and Delineation (Ogden, Utah: Hill Air Force Base, March 1995), II-61.

demolished). After flight tests, workers unloaded and placed the equipment in sealed containers covered with canvas and immediately brought the containers back to Building 214, where they were stored. If the equipment was left in the plane, an armed guard had to be present at all times.

One project that was repaired and tested in Building 214, the "Norden Bomb Site," was a highly classified navigational instrument that sited targets visually for airplane bombing runs. Aircraft equipped with the Norden apparatus used automatic pilot and stabilization devices that aided in the accurate siting and aiming of targets. Honeywell, a military contractor, manufactured this flight control equipment, and American pilots used it successfully in Germany during World War II.

Building 272 provided additional aircraft repair facilities. It was completed in August 1943 and located in the maintenance area southeast of the main repair hangars of Building 225. Situated between the Transport Squadron Hangar and the Engine Storage Warehouse, Building 272 housed the aircraft armament repair facilities for Hill Field. Constructed from wood frame over a concrete foundation, the building is a large, square, one-story, industrial structure with a flat roof. Most of the interior is an open, column-filled space. Most World War II-era planes serviced at Hill Field were equipped with armament of some type, such as bombs and machine guns, which often necessitated rehabilitation and repair after even limited duty in the Pacific or in Europe. Building 272 also housed the Machine Tools Unit, which manufactured and repaired tools used by mechanics in maintenance shops throughout the Depot, particularly the nearby Engine Repair Building.

One of the earliest buildings constructed at Hill Field, Building 1 occupied a key position at the intersection of Runways 3 and 4, as well as a key position in the aircraft maintenance and repair process. This large steel and brick aircraft hangar, which took more than one year to complete, housed aircraft at the end of the repair process and provided the final check on them before test flight. Upon initial construction, it consisted of one central hangar with sliding leaf doors made of steel and glass and a two-story brick administrative office wing on each of the east and west sides. While Building 1 was under construction, the air field was used for little more than an emergency landing field since it lacked night lighting. Runway and flight operations were controlled from the air traffic control tower that was located at the top of the roof of Building 1.

Following a short period as an important area for processing planes for storage at the beginning of the war, the Aircraft Operations Hangar (Building 1) housed the Flight Test Section, organized under Mr. Perry Boren in January 1942. Workers in the Aircraft Repair Hangars (Building 225) transferred recently completed and inspected aircraft to Building 1. The Flight Test Section received, serviced, and maintained these planes in a flyable condition until test flights could be completed. In the beginning, overlapping day and swing shifts (6:00 a.m. - 2:30 p.m. and 11:30 a.m. - 8:00 p.m.) enabled planes to be prepared for test flight by 8:00 a.m., and to be parked and secured after 4:00 p.m. with only two shifts. After the Pearl Harbor attack of December 1941, however, technicians worked in three shifts to staff the Hangar at all times. By the fall of 1943, Depot command built the Transport Squadron Hangar (Building 270) to supplement Building 1.

This building differs from the other hangars at Hill Field. It has a modulating flat-roof structure with a shallow pitch unlike the segmentally-arched roofs of the other aircraft hangars. The interior of the hangar consists of one massive, continuous open space, spanned by steel trusses. Building 270 functioned as a back-up facility for Building 1 and the Flight Test Section when repair and maintenance operations were at their peak during the war.

In each of these buildings flight preparation crews checked airplanes and approved them for takeoff. Systems checked included leaks/hydraulic equipment, tire inflation, fluid levels, and other regularly maintained items. The pilot conducted a "walkaround," checking all systems for potential problems. Any problems or discrepancies were noted on a "squawk sheet." The crews in Buildings 1 and 270 made minor adjustments and repairs, but if problems were more substantial the plane was taken back to the main repair hangar, Building 225, for repair. The entire aircraft would be monitored again prior to takeoff. Often, a plane went through this procedure three or four times before it was allowed to depart.

Specialized education played an important role during and after World War II, especially for the Depot's aircraft maintenance and repair mission. Building 295 originally housed the Post School and Training Facilities for both enlisted and civilian personnel. This structure, a double hangar, was built in two parts. The Army completed the north hangar, which has a gable configuration, in January 1943, and the south hangar, which has a segmentally-arched configuration, in October of the same year. The two hangars are joined together by a one-story section that originally contained a boiler room and classrooms. Both hangars have steel-frame doors with ten leaves. Building 295 contained hands-on workrooms where students practiced new skills on aircraft bodies, engines, and other parts stored inside the hangars.

Operations at the installation maintained a strong and steady demand for new workers throughout World War II. Since most of the initial labor force was untrained in the repair and maintenance of aircraft, buildings like this one were essential to successful operations. Before entering new workers in a training program, Depot authorities tested them to determine their aptitudes, facilitating the most efficient assignment of all personnel. They conducted continuous training, since the demand for workers in specific areas shifted over time. Depot command often retrained technicians proficient in certain tasks for new jobs in order to meet the changing needs and technology of the aircraft needing repairs.

Prior to the completion of Building 295 in 1943, local schools and universities provided training facilities for the Ogden Air Depot. In 1941, the U. S. Army Air Forces tested 17,000 high school students in the area and selected 150 to be trained for highly technical repair jobs at the new Hill Field installation. Students trained at West High School in Salt Lake City in classes such as propeller repair, engine repair, and instrument mechanics. The first class consisted of 10 men, who graduated after six weeks and were assigned to the Instrument Repair Building (Building 214). The Ogden Air Depot and the Utah State Department of Vocational Education coordinated a second training program in



mid-1941. Schools granted students vocational school credit for courses customized to prepare workers for jobs at the Depot.

During the first months of World War II, all students trained in many different aspects of general aircraft repair. In later months, however, officials modified educational techniques to accommodate the specialized labor and production line methods that had become widespread among individual repair shops. Rather than being instructed in general aircraft repair theory and multiple applications, students trained thoroughly to perform single (and often very small and repetitive) tasks. This newer curriculum greatly accelerated the rate at which trained workers could be assigned to the repair shops, since they did not need to understand the entire aircraft engine in order to perform the smaller, specialized tasks.

In the final analysis, Hill Field provided many Utahans with valuable new experiences working with the latest technology and engineering methods. The incredibly rapid rise and development of the Air Depot's aircraft maintenance and repair facilities was unprecedented in the region. The development of these facilities provided for the economy and growth of the region and helped support a world-wide war effort in the process. For many people, especially those women that came to work in huge numbers for the first time, the often strange, industrial buildings of the Air Depot carried personal meaning as places where they were introduced to new technologies, new possibilities, and new lives. This unique collection of buildings from the past reminds those of us in the present of a critical moment in human history and experience, a time of human development and action perhaps unmatched since.

#### Storage of Aircraft

Completed in October 1941, two months before official U. S. involvement in World War II, Building 1 played a crucial role in the early storage of aircraft at Hill Field during the flurry of military activity at the start of the war. The first major project was to manage planes transferred to the Ogden Air Depot (the name of the command at Hill Field before and during the war) from the coast as a precaution against possible coastal bombing. Two feet of snow covered the airfield at the time, and waterproof tarpaulin covers for wheels and brakes were not available. The brake drums and wheels of the aircraft became frozen solid from snow and moisture so they could only be moved on skids. A Depot officer (Lt. Dart) devised a set of skis to use under the wheels of the planes, which enabled them to be drawn by tugs. Building 1, the Aircraft Operations Hangar, was utilized to thaw the planes out two or three at a time, an extremely slow process. Practically every section in Engineering was assigned to this task, and all available assistance was drafted until the planes were properly prepared for storage in early spring of 1942. All available key personnel worked both day and night to process these aircraft, even though they did not receive overtime pay.

In addition to aircraft repair and maintenance, the Aircraft Repair Hangars (Building 225) served as the center of activities not only to prepare aircraft for long-term

storage,<sup>4</sup> but to remove aircraft from storage status and prepare them for service when needed. Hill Field personnel maintained aircraft placed in permanent storage in as near a flyable condition as possible by performing a series of preventative measures designed to protect aircraft from deteriorating. Busy crews moored all aircraft to the ground and placed them on wood blocks to remove weight from the tires, which were covered with balloon cloth to prevent deterioration of the rubber by oil and grease that might drip from the engines. They also locked all moveable controls internally and externally with wood and metal locks, and coated all exposed machine surfaces with paint or other exterior corrosion preventatives. All other outside metal surfaces of the craft required spraying with zinc chromate. Personnel used cloth tape, painted with a dope and aluminum paste, to seal all vent openings, thereby preventing the entrance of foreign matter and water. They drained all engine oil, removed metal spark plugs, and sprayed engine cylinders with a preservative oil and sealed them. The fuel tanks, brake system, hydraulic system, carburetors, and anti-icing systems received treatment from crews and were sealed against the elements.

All chemicals needed for these processes were stored in the Paint, Oil, and Dope House (Building 11). (Dope was a lacquer used to protect, waterproof, and toughen cloth surfaces). Proper surface treatment was an essential step in the storage process. Assisting in these processes as well, the Spray Pool (Building 266) provided shelter for the surface treatment of aircraft engines, body parts, and other items. Workers transferred chemicals from the Paint, Oil, and Dope House to the Spray Pool and other shops as needed. Personnel applied some of these surface treatments by dipping parts into tanks of liquid in various repair shops, and applied others by spraying the chemical with an air-powered gun. Building 266 housed components that required the latter method, such as aircraft engines that were "pickled" (sprayed inside and out with rust inhibitor oil) prior to storage. Buildings 11 and 266 greatly aided the mission of Ogden Air Depot to prepare aircraft for storage.

But Hill Field personnel also removed aircraft from storage when needed and prepared them for service during World War II. In December 1944, Ogden Air Depot transferred seventeen B-24J Airplanes to Tulsa, Oklahoma after being removed from storage at the Depot. After two weeks of work on each plane, workers released four aircraft for transfer each day. Approximately 200 personnel were divided among 5 stations to accomplish this job. Workers cleaned and inspected each entire airplane, and repaired or replaced engines, oxygen systems, electrical systems, fuel systems, instruments, propeller governors, automatic pilot controls, radios, and armament as needed. Also in 1944, the Depot command established two progressive repair lines in Hangar #2 (of Building 225) in order to process twenty P-47 fighter escorts for removal from storage each month. Sixty workers with specialized training transferred to the

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<sup>4</sup>In mid-1944, the command at Hill Field estimated that 2,750 aircraft could be stored on the base. No inside storage facilities were available for engines, propellers, or tires that were removed from planes before they were placed in storage.

project from various other areas, including the airplane repair, armament, sheet metal, electrical hydraulics, engine repair, communications, instrument repair, painting, and inspection departments. An acute shortage of spare parts presented a major problem which required that many parts be manufactured at Hill Field as they were needed. These were just some of the difficulties experienced in the difficult task of storing and revitalizing aircraft during this era.

### Supply

Alongside the repair, maintenance, and storage of aircraft, Hill Field served the Army Air Corps more generally as a storage and supply center for air materiel. At the outset of World War II, the primary warehouse facilities at the Ogden Air Depot were Buildings 5 and 100. Building 5, a large, two-story, U-shaped brick building, contained administrative offices in a flat-roofed section which ties the two warehouse wings together at the north end of the building. The two long, narrow wings housed storage spaces accessed by railroad tracks running between them. The section closest to the offices contained shipping and receiving areas adjacent to a large loading platform at the end of the tracks. Materials stored in this part of the warehouse included clothing, rubber, and photographic paper. Building 100, just to the south of Building 5, comprised the former Depot Supply Warehouses #2 and #3 (also called Buildings 103 and 104, which were merged into a single building in the late 1950s and early 1960s to form Building 100). The structure was originally two warehouse buildings on either side of the railroad tracks, with a warehouse layout similar to that for Building 5. The Purchasing and Contracting Offices used Building 103 (the west side of Building 100), and Building 104 (the east side) held general warehouse storage space.

Ogden Air Depot received its first shipment of supplies in January 1941 and additional shipments followed in February and March. By May 1941, the Depot received an average of 20 train carloads of material per day. Buildings 5 and 100 had not yet been completed, and all available warehouse space soon filled to capacity. Depot personnel hauled many overflow supplies by truck to a leased warehouse in Bountiful, and material that could be stored safely outdoors under tarpaulins covered over 500,000 square feet of Hill Field. The Army Air Corps expected to complete a desperately needed 1,000,000 square feet of additional warehouse space at Hill Field by October. Buildings 5 and 100 were completed in July 1941, and each provided approximately 300,000 square feet of indoor storage space. As fast as warehouses could be completed, workers filled them with supplies.

The December 1941 attack on Pearl Harbor brought a more intense flood of supplies to Ogden Air Depot, as the military brought goods inland as a precaution against possible coastal bombing. Because of the shortage of indoor storage space, Depot personnel stacked even more items outdoors and covered them with tarpaulins. Packing cases did not have packing lists or shipping tickets attached to them, so items could not be identified without unpacking them. Since the shipping crates were outside, workers did not unpack them unless absolutely necessary. Personnel made several attempts to

obtain the original packing lists from the manufacturers who shipped the materials, but they did not succeed.

Most available personnel at Hill Field processed incoming aircraft at the beginning of the war, so few workers were available to catalog the incoming supply shipments. Only 16 of 1,700 employees in the Depot Supply division had more than one year of experience with supply operations. To complicate matters further, most of the people who aided in the work had never seen aircraft parts like ailerons (movable flaps that mounted to the wings of airplanes), or superchargers (compressors used to supply high pressure air to engine cylinders), which were prevalent among the incoming supplies. Thus many items, even when unpacked, could not be readily identified or cataloged. Requests for items listed as "not in stock" were often present, but the items could not be issued because they had not been identified, inspected, or recorded.

Depot command established a Special Parts Control Unit (later renamed Expediting Branch) in February 1942 to anticipate, evaluate, and minimize shortages of goods needed to complete aircraft repair, winterization, and modification projects. This unit placed specialized sub-depots within each division to optimize accessibility. Expeditors, who maintained follow-up on material that could not be readily furnished by the Supply Department, requisitioned all non-expendable material for the engineering shops to the General Supply Department. At first, each individual shop was represented by an expeditor who traced materials required for each job. This involved investigations into all classes of supplies, and resulted in considerable confusion and duplication. After a few months, command assigned each expeditor certain property classes for all projects, which was much more efficient.

As the shops became specialized, production increased, and more parts and materials were secured from sources off the Depot. These matters demanded close coordination between stock tracers in the General Supply Department and the Expediting Branch in order to have material availability information always on hand for each shop. Standard methods for obtaining (and maintaining) this information involved a "Kardex System" that gave perpetual figures on the number of reparable items received in the shops and those completed, both daily and cumulative. The Kardex indicated whether each item left the shop serviceable, reparable, or condemned and greatly aided supply operations.

The Army constructed several large warehouses during World War II in an area southwest of the main flight line facilities to relieve storage pressures on the warehouses closer to the flight line (like Buildings 5 and 100). Completed in February 1943, the five buildings of this area are massive, rectangular-framed warehouses built entirely of wood, with broad loading docks. The exteriors are clad in wood-lap siding which gives the appearance that the buildings are covered with shingles. Both the east and west side elevations have an exterior wood sliding door. Each sliding door, approximately twenty feet tall, consists of two wooden tension cross brackets. Along the long elevations (north and south), there are continuous concrete loading docks with several exterior sliding doors. The structures have similar interior layouts, share the same width (180'), yet vary in length. They all consist of interior spaces partitioned into separate storage bays, which

are divided by protective fire walls. Building 820 is the shortest in length at 720' (three bays); Building 810 is 950' long (four bays); Building 800 consists of two 950' long structures (identical to Building 810) joined end-to-end (eight bays); and Buildings 830 and 840 are each 1,200' in length (five bays).

These warehouses provided much-needed space for storing supplies as the American war effort continuously expanded. For example, Building 840, one of the largest of the five structures at a length equivalent to four football fields, added approximately 216,000 square feet of indoor storage space to the Ogden Air Depot's capacity. During the early years of these massive "800-Zone" warehouses, they stored incredible amounts of materials, faithfully carrying out Hill Field's mission as a military air materiel supply facility.

### Support Facilities

Basic facilities to support the operation of a major air depot and aircraft maintenance and repair area were some of the earliest constructed buildings at Hill Field. Buildings 9, 32, and 260 were all completed in 1941, just before America's official entry into World War II. The hazards of air travel in the 1930s and 1940s, along with the inherent dangers of an active and expanding military installation, necessitated fire and crash control facilities. The Fire Station (Building 9), completed in March 1941, was one of the first buildings constructed at Hill Field. It is a two-story, V-shaped structure with a yellow brick exterior. The original portion of Building 9 consists of two distinct sections. The south section of this moderately-sized building served the administrative and operational functions of the station. The north section housed fire trucks and other emergency intervention equipment. Command located the station in close proximity to the flight line in order to expedite intervention with aircraft crashes. Building 2, constructed by June of 1942 next to the Aircraft Operations Hangar (Building 1), housed the ambulance and crash trucks.

Building 32 is a one-story brick building organized in an "L" configuration which served as the Gas & Oil Station for vehicles used by the Quartermaster Division at Hill Field during World War II. A pump island on the south side of the building is covered with a hip roof that spans from the main portion of the building to two square brick columns. Gas pumps, originally located under this porte cochere, have subsequently been removed. The building originally contained two rooms: the larger (eastern) room housed the oil storage area and the smaller (western) room served as the office and contained a built-in checker's desk. Gasoline was stored immediately to the northeast of Building 32, behind the Quartermaster Warehouse and Commissary, or Building 15 (site of the present parking lot). Although the station itself cost under \$8,000 to build, the Air Corps gasoline fueling system cost over \$143,000.

The many buildings used in Hill Field's regular operations required heat, which the Steam Plant (Building 260) provided. The building is centrally located near the Aircraft Repair Hangars (Building 225); it provided heat to many of the 200-series buildings, including the Engine Repair Building (265), the Engine Test Cells (267 &

268), the Armament Repair Building (272), and the Post School & Training Facility (270). Buildings not heated by the Central Steam Plant contained independent heating systems like electric unit heaters or gas-fired steam boilers. This Steam Plant, a one-story, L-shaped, brick industrial structure with steel sash windows and tubular steel doors, contained four separate steam boilers in a single room. These boilers were designed to be powered by gas, but could also run on oil if necessary. Each boiler was connected to separate 18"-diameter roof vents. In 1943, the Army placed a 25,000 gallon standby oil storage container outside, on the north side of the building.

The Headquarters Building (Building 180), finished in June 1943 offered administrative support to operations at Hill Field. This two-story, U-shaped structure was originally sheathed in wood and had a flat roof; both have been altered. The open end of the "U", the building's wings, faces south and away from the flight line area. The Headquarters Building served as the administrative nerve center for Hill Field operations and guided the primary mission of the installation during the extremely active World War II period. All official correspondence went through Building 180, including orders from and responses to the Air Service Command.

Private offices for military officers and open, shared clerical spaces for administrative assistants like secretaries and clerks dominated the building. In 1948, for instance, Building 180 contained all offices of the Command Section in rooms 209-214. The Chief of Personnel and Administration, the Inspector General, the Adjutant General (room 114), the Comptroller, and the Military Personnel Division were also located in this building. The Cryptographic Branch occupied an office in a vault, and the first floor also contained a small conference room and two post offices. Officers and enlisted men used separate post offices, another testament to the inherent hierarchy among military workers. Other offices located in Building 180 during the 1940s included the Welfare, Morale, & Recreation Division, Special Service, Red Cross, and Signal Corps. Command allocated additional space for the following: Enlisted Men's Training Branch (room 216), Public Information Office (room 220), Base Executive Office (room 210), Intelligence (room 114), Special Investigations (room 102), Air Inspectors' Office (room 180), Judge Advocate (room 215), and Ground Safety Division (room 108). These offices served as the brains of the Army Air Forces at Hill Field from the height of World War II on into the Cold War.

### Residential Area

As the American military expanded prior to the war, and as operations at Hill Field steadily grew, a need developed for housing and related services for officers and personnel. Therefore, the installations initial construction projects included several residential structures to be built immediately west of Buildings 225 and 100, two of the largest main operations buildings at Hill Field. One of these, Building 120, known as the Barracks and Post Exchange, was completed in June 1941 and originally contained retail shopping and housing facilities for workers at Hill Field. Building 120 is a three-story beige-brick office building roughly 50' x 209' with understated neoclassical stylistic

elements. It has undergone very little interior or exterior modifications since its completion in 1941. The east front elevation is arranged on a formal symmetrical organization with the main entrance located in the center. This entrance is elaborated with a small, gently curving balcony above the door. The structure has a hip roof with five small circular dormers on both the east and west facades. The Post Exchange and Company Stores filled the ground floor, which featured a tailor shop, barber shop, and soda bar.

Living areas for single men occupied the second and third floors of Building 120, which contained various dormitory-style quarters arranged along a double-loaded corridor. Varieties of interior spaces allowed military hierarchy to be expressed in the assignment of quarters. Residents with higher military rankings acquired greater privacy and more living space. First Sergeants lived in private rooms, and Non-Commissioned Officers and cooks boarded two people per room. Lower level enlisted soldiers shared one room among 10 men. On the second floor, nineteen residents shared one bathroom with two toilets and two showers. The south end of the second floor contained a "Day Room" used as a common social and recreational area by all residents, while the north end accommodated a shared mess hall and kitchen. The Commanding Officer used a private office in the center of the second floor of the building. This office adjoined a clerks' office and opened onto a private balcony. The attic held additional rooms, but their functions remain undetermined.

To the south of Building 120 the Army developed a residential area for officers and their families. The builders completed construction between January and June 1941 on several main buildings laid out in a formal pattern on a common lawn. Buildings 136, 137, and 138 were designed for the families of upper-level, non-commissioned officers, while Buildings 143 and 145 served the company officers and their families. Each of these is a duplex designed in the colonial revival style. Buildings 136-138 are identical, two-story, U-shaped, beige-brick buildings. The front elevation is arranged in a formal, symmetrical organization with each unit's doorway located to the side of the elevation's centerline. Both doorways on each building are crowned with a classical entablature comprising an architrave, frieze, and cornice supported by plain pilasters with Doric capitals. Each unit has two floors with formal living and dining rooms on the first floor and three bedrooms on the second floor. Buildings 143 and 145 are identical as well, each comprising a two-story, rectangular, beige-brick structure, with a front facade displaying a classical symmetry. Their doorways are marked by segmental pediments that are supported by plain Doric columns and the hip roofs each have two hip dormers, with one centered over each doorway. Inside, each unit has two floors plus an attic. Each unit contains a formal living and dining room, a kitchen, and maid's quarters on the first floor. On the second floor, each has three bedrooms and two full bathrooms.

Situated at the southern end of this residential area, Building 144, the Field Officer's Quarters, also contributes significantly to the character of the area. It is an elegant, rectangular, two-story brick house built, using U. S. Army standardized plans, for the family of an upper-level field officer. The front facade is symmetrical, with the doorway centrally placed. The doorway is elaborated by a triangular pediment, supported

by plain Doric columns, helping to establish the dominant colonial revival styling of the building. The corners of the building are accentuated with brick quoins that are four-courses tall, further emphasizing the colonial revival architecture. The house has a formal living room, dining room, sun room, kitchen, and maid's quarters on the first floor, while the second floor contains four bedrooms and two full bathrooms.

Altogether, these buildings render a unique portrait of residential life at Hill Field during the 1940s. Their location on a common, formal lawn embraced a distinctly suburban ambiance based on its lush landscaping and spacious yards, providing a pastoral retreat from the pervasive industrial environment of the rest of Hill Field. Military hierarchy and rank were evident in these structures given the larger and more private living space provided for officers. Perhaps more importantly, the dominant colonial revival architecture hearkens back to American Revolutionary times and the birth of the nation, encouraging a patriotic nationalism desperately needed in a time of crisis and approaching world-wide warfare. In this way, the residential buildings at Hill Field inspired the officers and personnel alike to give all for their country in a time of urgent necessity.



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